DATASHEET
FUJITSU ETERNUS DX80
DISK STORAGE SYSTEM

THE DATA SAFE

ETERNUS DX - THE DATA SAFE

ETERNUS DX disk storage systems - the most reliable and secure data safes:
For small and medium-sized businesses, ETERNUS DX60, DX80, and DX90 provide fast and highly available data. For mid-range and enterprise customers who need secure and flexible integration into the data center, Fujitsu offers the ETERNUS DX400 series and ETERNUS DX8000 series. ETERNUS DX disk storage systems use the same software stack and hardware functions across the entire range to allow ease-of-use and greater efficiency for users.

ETERNUS SF - Fujitsu's Storage Management Software - reduces total cost of ownership by simplifying the monitoring and management of ETERNUS DX disk storage systems. Furthermore it helps to achieve business continuity by leveraging the Advanced Copy functions for data backup, using snapshots and clones. Altogether, with ETERNUS SF, storage resources in complex IT environments are optimized.

As one of the world's largest IT services companies, Fujitsu combines many years of experience in complex data centers to offer tailor-made solutions that perfectly fit customers' individual requirements. Moreover, Fujitsu is one of the few global players to provide flexible infrastructures with its Dynamic Infrastructures strategy: server, storage, networking and service solutions - all from one trusted partner.

ETERNUS DX80

ETERNUS DX80 is a versatile, reliable and very effective disk storage system for small and medium-sized businesses. It offers excellent expandability up to 240TB with (120x 3.5" Nearline SAS drives) in 20U of rack space as well as a range of access port speeds to fit specific requirements.

ETERNUS DX80 includes high availability features like Data Block Guard which adds an 8-byte check code to every 512 bytes of data to ensure enterprise-class data integrity. Redundant Copy rebuilds single disk drives at the earliest signs of failure. This dramatically reduces recovery time and minimizes the risk of permanent data loss. Fujitsu's license-free encryption option prevents unauthorized access to confidential data wherever it is stored. All of these features, and the use of Eco-mode, mean the best in reliability and green storage in its class.

ETERNUS DX80 is ideal for all kinds of system environments and supports three major host interfaces, Fibre Channel, SAS and iSCSI. It also meets the needs of different implementation sizes by offering a range of connection speeds: From four port 1Gbit/s ISCSI (3.5" base model only) for up to 128 servers, four port 3Gbit/s SAS (3.5" base model only) for up to 4 servers; to four ports of high-speed 8/4/2/1 Gbit/s Fibre Channel (all models)) for connection to up to 128 servers.

ETERNUS DX80 is delivered already equipped with 8 backup snapshots and can be optionally upgraded to 1024 snapshots..

FEATURES AND BENEFITS

MAIN FEATURES	BENEFITS

QUALITY AND RELIABILITY
- Redundant RAID controllers, fans and power supplies that are hot swappable
- Cache Protector uses capacitor technology to better protect RAID controller cache during power outages
- Redundant Copy rebuilds a disk automatically as soon as the first signs of failure appear
- Data Block Guard appends check codes to every data block and verifies them at multiple checkpoints
- RAID Migration enables LUNs to be moved dynamically between different RAID groups and hard disks without interrupting operations
- Mixed SAS, Nearline SAS disk drives and SSD (Solid State Drives)
- Mixed configuration with 3.5" and 2.5" disk enclosures for 2.5" base model
- Eco-mode spins down disk drives

BENEFITS
- For highest 99.99% availability
- Returns the array to high performance mode within minutes following restore
- Dramatically reduces recovery times and minimizes the risk of permanent data loss during recovery
- Helps to ensure maximum data integrity on disk, in cache and in between
- Allows different service levels to be provided, matched to access frequency and data importance
- Fulfills all main performance and capacity requirements
- Reduces energy consumption and heat dissipation

INNOVATION AND FLEXIBILITY
- Latest technologies and improved RAI D Controller
- Fibre Channel or iSCSI or SAS host connection
- 3.5": 15,000 rpm SAS, 7,200 rpm Nearline SAS drives, 2.5": 10,000 rpm SAS drives
- 2.5" and 3.5": SSD (Solid State Drives)
- 8 snapshots (standard) upgradeable to 1024

- For highest flexibility
- Flexibility in implementation costs and system configuration
- Disk storage tailored to application and space requirements
- For the most demanding data access requirements
- For business continuity and dependable data protection

EASE-OF-USE
- Intuitive web interface
- Storage management software ETERNUS SF Express is bundled

- Easy to install and use
- Simplifies storage operation and maintenance

VERSATILITY AND INTEROPERABILITY
- A wide range of Operating Systems, servers as well as applications is supported

- Versatility in use with databases, storage consolidation, clustering, tiered storage, backup-to-disk and many other high value storage functions

QUALITY AND RELIABILITY

ETERNUS DX80 offers non-stop robustness and redundant hot-pluggable components such as power supplies, fans, and RAID controllers.

All the relevant RAID levels (0, 1, 1+0, 5, 5+0 and 6) are available so that data can be protected in a flexible manner to meet reliability and security requirements. Furthermore, the RAID Migration feature can be used to dynamically move data between different RAID groups and drives without interrupting operations. This allows data to be moved to fast SAS disk drives or high-capacity Nearline SAS disk drives according to its access frequency and importance.

With the ever increasing capacities of Nearline SAS disk drives, recovery times when a drive fails are extending. This increases the risk that another drive will fail during such recovery. It can take a number of days to rebuild a 2 terabyte disk drive in a RAID 5 configuration. "Redundant Copy" starts the rebuild procedure as soon as the first signs of failure appear. This dramatically minimizes the risk of permanent data loss during the recovery action.

ETERNUS DX80 protects data on the disk drives not only via RAID but also via the Data Block Guard. This function appends a check code to every data block and verifies it at multiple checkpoints. This improves data integrity both on the drives and in the cache. Should data corruption occur, the system can detect and rectify the error to guarantee the consistency of all stored data.

ETERNUS DX80 is also equipped with state-of-the-art Cache Protector. Instead of traditional batteries, it uses capacitors to write the contents of the RAID controller cache to flash memory in the event of power failure. This means lengthy power failures can be "survived". The power generated by the capacitor is sufficient for the data backup. When power supply is restored, the cache can be restored very quickly as capacitors recharge a lot faster than batteries. The capacitors used in ETERNUS DX80 do not need as much maintenance and have a longer lifespan than batteries frequently used in other systems.

INNOVATION AND FLEXIBILITY

With three interface models, ETERNUS DX80 can connect to hosts via Fibre Channel, iSCSI or SAS, using either single or dual controllers with 2GB of each cache. Online upgrades from single to dual controller configurations are possible. With two Fibre Channel controllers, a maximum of 128 hosts can be connected in SAN environments. In contrast, the iSCSI models enable SAN functionality via the well-known Internet Protocol which requires no investment in new IT infrastructure and training, making it very suitable for small businesses. In comparison the SAS models directly connect to servers so that very low-priced cluster configurations can be implemented.

With the Advanced Copy functions, a business data volume can be copied to a separate copy volume within the disk storage system, at any point in time. Once the copy is completed, the copy volume can be separated from the business volume. This allows easy backup to a tape device, as using the point in time copy allows normal operations on the business data to continue.

ETERNUS DX80 is equipped with 8 snapshot sessions. Using the GUI or CLI they enable planning of the required quantity of copy sessions as well as testing of functions. Once a copy license is purchased, snapshots can be extended to 1024 sessions.

ETERNUS DX80 is a leading energy-efficient storage system. In Eco-mode, which uses MAID (Massive Array of Idle Disks) technology, it requires even less energy and produces less heat as disk drives not in use can be shutdown. In backup-to-disk environments, drives used for nightly backup can be spun down during daily operations. This contributes significantly to system and data center efficiency.

EASE-OF-USE

Installation is quite simple. The management software - with its graphical user interface and installation wizard - is designed for easy intuitive operation and comes pre-installed on each system. Day to day operation management of ETERNUS DX80 is very straight forward. Firmware upgrades can also be carried out - usually without any operational interruptions.

With ETERNUS SF Express already bundled for simplified storage system management and maintenance, this same software assists in monitoring multiple ETERNUS DX disk storage systems from the one centralized console. In addition it manages the Advanced Copy functions within the storage system making snapshots and clones an easy task, through one combined management console.

VERSATILITY AND INTEROPERABILITY

At just 2U height and with a capacity of 12 drives in 3.5" format, ETERNUS DX80 flexibly scales from 600GB to 240TB. An alternative FC base model is available for up to 24x 2.5" drives. With 2.5" drives the maximum storage capacity of each system is limited to 36 Terabytes.

ETERNUS DX80 is suitable for a broad range of uses, including high-availability solutions. Examples are: Microsoft Cluster Server, x10sure or ServerView Resource Coordinator VE, storage consolidation, critical company applications, such as databases or e-mail, archiving and backup-to-disk. ETERNUS DX80 is also ideal for use in the virtual server environments of VMware vSphere, Citrix and Microsoft Hyper-V.

TECHNICAL DETAILS

GENERAL SPECIFICATION		3.5" BASE MODEL		2.5" BASE MODEL	
		SINGLE CONTROLLER	DUAL CONTROLLER	SINGLE CONTROLLER	DUAL CONTROLLER
CPU Frequency		1.2 GHz			
RAID Levels		0, 1, 1+0, 5, 5+0, 6			
Host Interfaces		Fibre Channel (8/4/2Gbit/s) Fibre Channel (4/2/1Gbit/s) iSCSI (1Gbit/s) SAS (3Gbit/s)		Fibre Channel (8/4/2Gbit/s) Fibre Channel (4/2/1Gbit/s)	
Number of controllers		1	2	1	2
Number of host interfaces		2	4	2	4
Number of hosts	Fibre Channel	Max. 64	Max. 128	Max. 64	Max. 128
	iSCSI	Max. 64	Max. 128	n/a	n/a
	SAS	Max. 2	Max. 4	n/a	n/a
Cache memory capacity		2 GB	4 GB	2 GB	4 GB
Number of drive enclosures		Max. 9 (3.5" only)		Max. 9 (3.5") / Max. 4 (2.5")	
Number of drives		2 - 120			
Storage capacity	Physical capacity	Max. 240.0 TB		Max. 219.6 TB	
	Logical capacity	Max. 176.1 TB		Max. 161.0 TB	
Drives 3.5-inch	SAS disk drives	600GB/450GB/300GB (15,000rpm)			
	Nearline SAS disk drives	2TB/1TB (7,200rpm)			
	SSD (Solid State Drives)	200GB/100GB			
- Note		3.5" drives are available only with 3.5" drive enclosures for 2.5" base models			
2.5-inch	SAS disk drives	n/a		300GB/146GB (10,000rpm)	
	SSD (Solid State Drives)	n/a		200GB/100GB	
Drive interface		Serial Attached SCSI (3Gbit/s)			
Redundancies	RAID Controller	No	Yes	No	Yes
	Fan	Yes	Yes	Yes	Yes
	Power Supply	Yes	Yes	Yes	Yes
Number of Snapshots	Standard (built-in)	8			
	Maximum (option)	1024			
- Note		Snap/Clone License must be purchased to maximize the number of Snapshots			
Remote Copy feature		No			

INSTALLATION SPECIFICATION		3.5" BASE MODEL	2.5" BASE MODEL
Dimensions (W x D x H)	Standard	483 x 650 x 88mm (19 x 25.5 x 3.5 inch) [2U]	
	Maximum	483 x 650 x 889mm (19 x 25.5 x 35 inch) [20U]	483 x 650 x 444mm (19 x 25.5 x 17.5 inch) [10U]
Service Area	Front	800 mm (31.5 inch) or more	
	Rear	800 mm (31.5 inch) or more	
Maximum Weight		350 kg (35 kg per single enclosure) 772 lb (77.2 lb per single enclosure)	175 kg (35 kg per single enclosure) 386 lb (77.2 lb per single enclosure)
Power	Voltage	AC 100 – 120 V / AC 200 – 240 V	
	Phase	Single	
	Frequency	50 Hz / 60 Hz	
Maximum Power Consumption	AC 100 - 120V	3750 W (3770 VA)	1880 W (1900 VA)
	AC 200 - 240V	3740 W (3780 VA)	1840 W (1880 VA)
Maximum Heat Generation	AC 100 - 120V	13500 kJ/h (12796 BTU/h)	6768 kJ/h (6415 BTU/h)
	AC 200 - 240V	13464 kJ/h (12762 BTU/h)	6624 kJ/h (6278 BTU/h)
- Note		Max. Power Consumption and Heat Generation for 2.5" base models apply for configurations with only 2.5" drives	
Environmental Conditions	Temperature (Operating)	5 – 40°C (41 – 104°F)	
	Humidity (Operating)	20 – 80% RH	
Altitude		3000 m (9842 ft.)	

SUPPORTED RAID LEVELS

RAID 0	Data striping on several disk drives
RAID 1	Mirrored disk drives
RAID 1+0	Data mirroring, then striping of the data over several disk drives
RAID 5	Striping with distributed parity
RAID 5+0	RAID 5 arrays, striped again over several drives
RAID 6	Striping with distributed double parity

MANAGEMENT

Interfaces	Ethernet (1000 Base-T / 100 Base-TX / 10 Base-T)
Supported protocols	SNMP (version1), SMI-S 1.2
Administration	Web-Environment, CLI (Command Line Interface), ETERNUS SF Express

SUPPORTED OS FOR ETERNUS SF EXPRESS

Operation Management Server	Microsoft® Windows Server® 2008 R2 Standard (64-bit)
	Microsoft® Windows Server® 2008 R2 Enterprise (64-bit)
	Microsoft® Windows Server® 2008 R2 Datacenter (64-bit)
	Microsoft® Windows Server® 2008 Standard without Hyper-VTM (32-bit)(64-bit)
	Microsoft® Windows Server® 2008 Enterprise without Hyper-VTM (32-bit)(64-bit)
	Microsoft® Windows Server® 2008 Datacenter without Hyper-VTM (32-bit)(64-bit)
	Microsoft® Windows Server® 2008 Standard (32-bit)(64-bit)
	Microsoft® Windows Server® 2008 Enterprise (32-bit)(64-bit)
	Microsoft® Windows Server® 2008 Datacenter (32-bit)(64-bit)
	Microsoft® Windows Server® 2003 R2, Standard Edition
	Microsoft® Windows Server® 2003 R2, Enterprise Edition
	Microsoft® Windows Server® 2003 R2, Standard x64 Edition
	Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition
	Microsoft® Windows Server® 2003, Standard Edition
	Microsoft® Windows Server® 2003, Enterprise Edition
	Microsoft® Windows Server® 2003, Standard x64 Edition
	Microsoft® Windows Server® 2003, Enterprise x64 Edition

NOISE EMISSION

NOISE EMISSION	3.5" BASE MODEL	2.5" BASE MODEL
Sound Power Level (LWAd)	5.9 B	6.0 B
Sound Pressure Level (LpAm)	42.0 dB(A)	43.5 dB(A)
- Notes	measured with single enclosure according to ISO7779 and declared according to ISO9296	

COMPLIANCE WITH STANDARDS

Product safety	UL60950-1, CSA-C22.2 No. 60950-1, EN60950-1, IEC60950-1, GOST-R
Electromagnetic Compatibility	CNS13438(C6357) Class A, FCC CFR47 part 15 Class A, ICES-003 Class A, EN55022 Class A, VCCI Class A, AS/NZS CISPR22 Class A
Electromagnetic Immunity	EN55024
CE certification	Electromagnetic Compatibility Directive 2004/108/EC Low Voltage Directive 2006/95/EC
Environmental compliance	RoHS-compliant (Restriction of hazardous substances) WEEE-compliant (Waste electrical and electronic equipment)
- Notes	There is general compliance with the safety requirements of all European countries and North America. National approvals required in order to satisfy statutory regulations or for other reasons can be applied for on request.
Compliance link	Compliance link: https://sp.ts.fujitsu.com/sites/certificates/default.aspx

FUJITSU PLATFORM SOLUTIONS

In addition to Fujitsu ETERNUS DX80, Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships.

Dynamic Infrastructures

With the Fujitsu Dynamic Infrastructures approach, Fujitsu offers a full portfolio of IT products, solutions and services, ranging from clients to datacenter solutions, Managed Infrastructure and Infrastructure-as-a-Service. How much you benefit from Fujitsu technologies and services depends on the level of cooperation you choose. This takes IT flexibility and efficiency to the next level.

Computing Products

www.fujitsu.com/global/services/computing/
- PRIMERGY: Industrial standard server
- SPARC Enterprise: UNIX server
- PRIMEQUEST: Mission-critical IA server
- ETERNUS: Storage system

Software

www.fujitsu.com/software/
- Interstage: Application infrastructure software
- Systemwalker: System management software

MORE INFORMATION

Learn more about Fujitsu ETERNUS DX80, please contact your Fujitsu sales representative, Fujitsu business partner, or visit our website. www.fujitsu.com/eternus/

FUJITSU GREEN POLICY INNOVATION

Fujitsu Green Policy Innovation is our worldwide project for reducing burdens on the environment. Using our global know-how, we aim to resolve issues of environmental energy efficiency through IT. Please find further information at: www.fujitsu.com/global/about/environment/